

Abstract

Objective: This study aimed to investigate the effectiveness of Behavioral Drug and Risk Reduction Counseling (BDRC) in the improvement of craving and lapsing among the heroin crack addicts under methadone maintenance treatment. **Method:** In a quasi-experimental study, 30 heroin crack addicts were selected from among all the addicts who had received health care in one of the maintenance treatment centers in Tehran, Iran. Then, they were randomly divided into an experimental group (15 subjects) and a control group (15 subjects). The experimental group underwent twenty-five 90-minute counseling sessions on reducing drug abuse and risky behavior and the control group received only methadone. All the participants completed the Narcotic Drug Abuse and Risky Behaviors Inventory at the beginning of the study and six months following the treatment. Urine test was also conducted to examine the levels of morphine and stimulants in the participants. **Results:** The results showed that there was a significant difference between the two groups in terms of craving for drug use in the post-test stage ($P < 0.01$). In addition, the results revealed that there was a significant difference in the lapse rates between the two groups ($P < 0.05$). **Conclusion:** Behavioral Drug and Risk Reduction Counseling (BDRC) is effective in the improvement of craving and lapse in heroin crack abusers.

Keyword: Behavioral Drug and Risk Reduction Counseling (BDRC), craving, lapse, maintenance treatment

On the Effectiveness of Behavioral Drug and Risk Reduction Counseling (BDRC) in the Improvement of Craving for Drug Use and Lapse among Crack Heroin Abusers under Methadone Maintenance Treatment

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Introduction

Drug-related disorders are among the most serious problems in today's health, social, and economic world that have a direct impact on public health. Addiction is a psychosocial anomaly that is rooted in the abnormal and illegal use of some substances, such as alcohol, opium, hashish, etc. and causes the mental or psychological dependence of the sufferer (the addict) on drugs. This dependence has an adverse effect on one's physical, psychological, and social performance and, in extreme cases, it even threatens one's personal and social life (Noel, Brevers & Bechara, 2013).

This problem has inhibitory effects on the growth and prosperity of the society (Soleimani & Senobar, 2015) and the problems caused by drug abuse are considered as one of the global concerns and one of the behaviors threatening countries (Yaghoobi, Mohagheghi, Amiri & Esfandiari, 2015). Given that a large group of the Iranian population is directly involved in addiction, the wide recognition of the individual and social aspects of addiction and the identification of their impact on the success of addiction treatment programs are necessary. In fact, addiction has become a scourge, a social problem, and a therapeutic challenge. Addiction and its derivative chronic and long-term diseases and disorders, such as hepatitis and AIDS stop the sufferers from thinking, creativity, activity and reduce their quality of life in addition to damaging their employment status and family (Hajhossein & Hashemi, 2015).

Failure to treat addicts and high rates of addiction have made some researchers so determined to view addiction a chronic and periodic disorder (Sayyadi Anari, Esmaeali, Nazer & Khaleghi, 2002). Substance abuse is a chronic and relapsing disorder that is characterized by periods of remission and return. Disorders, such as depression, anxiety, schizophrenia, and drug addictions cause resistance against treatment and relapse into drug use.

The majority of the individuals who withdraw from drug use will make a lapse or will relapse. In statistical analyses, the highest rate of relapse has been attributed to the first 6 months (Sayyadi Anari et al., 2002; Nasti Zaea, 2007). As a result, it is not legitimate to assume that the objective of different treatment programs is only to provide some facilities for the discontinuity of drug use. The absence of drug use relapse is critical in the development of a suitable treatment program due to the relapsing nature of substance abuse (Karow et al., 2011).

Since addiction is a multifactorial phenomenon, a number of treatment cycles are required to reach the full recovery (Porzoor, Alizadehgoradel, Yaghoobi Zargar & Basharpour, 2015). Pharmacotherapy and psychotherapy are two main elements in addiction treatment (Morales & Fapa, 2007). In recent years, various treatment programs have been introduced for substance abusers which have been offered in the form of pharmacological and non-pharmacological treatments. Although pharmacotherapy is regarded as one of the common and effective approaches, it seems that this treatment alone is not sufficient and other

treatments that assign credit to the psychological, social, and environmental aspects of patients should also be used (Porzoor et al., 2015). In recent years, the tendency to complementary and alternative therapies has increased as secondary treatments and supportive therapies in many addiction treatment and care centers (Kelly, 2004).

However, pharmacotherapy is still widely used as a treatment method. Methadone maintenance treatment and Buprenorphin maintenance treatment (MMT & BMT) are among the successful medical treatments (Naderi, Binazadeh, Noroozi & Safatian, 2005). In maintenance treatments, methadone is the best alternative medicine to stop using drugs or opioids. Research findings have shown that this drug has a positive effect on reducing substance use, craving, lapse, withdrawal symptoms, and the relief of some psychiatric symptoms, including anxiety, depression, and impulsive behavior among addicts (Woody et al., 1983; cited in Scherbaum et al., 2005; Tehrani, 2008; Dastjerdi, Brahimi Rahshiri, Kholasehzadeh & Ehsani, 2010; Haddadi, Rostami, Rahimnejad & Akbari, 2011). The important point in maintenance treatments is that such a sufficient amount of methadone should be prescribed to the patients that they will not show any withdrawal or deprivation symptoms and will not feel the need for the reuse of drugs (Haddadi et al., 2010). However, despite the effectiveness of this therapeutic method, some patients experience an increased rate of drug use craving and several lapses with the passage of time, and even there is the possibility of the incidence of relapse into drug use (Sayyadi et al., 2002; Levin et al., 2006). In another study, Mokri, Ekhtiari, Edalati & Naderi (2008) showed that crack abusers held the highest rate of drug use craving and destruction compared to the consumers of other drugs.

Drug use craving is one of the most challenging and complex debates in the realm of addiction disorders (Pourseyyed Moosiayi, Mousavi & Kafi, 2012). Hormes & Rozin (2010) define craving as: a very strong and urgent desire for something so that it will be impossible to focus on something other than the subject at play. They conducted a study about 20 languages and found that words like liking, desire, wish, passion, and addiction are used as the words relating to craving. Generally, drug use craving emerges in the face of the signs related to the patients' experiences or fantasies from the conditions related to hedonism (Pourseyyed Moosiayi, Mousavi & Kafi, 2012). Craving is recognized as one of the most important factors determining the outcome of treatment (Mokri et al., 2008). In dealing with drug use craving and the resultant lapses, professionals and experts have attempted to make use of the individual or group therapy as a complementary treatment alongside methadone. Among non-pharmacological approaches, cognitive-behavioral therapy is always of special importance (Kadden, 2002; Mac-Key, 2007; Miller, Sorenson, Selzer & Brighman, 2006). Haddadi et al. (2011) showed that the addition of cognitive-behavioral psychotherapy to methadone has been more effective in reducing drug craving, impulsive behavior, and drug use in crack addicts. Based on the model of

cognitive behavioral therapy, when patients face high-risk situations, their self-efficacy will be reduced in case of the absence of appropriate coping responses, and positive expectations will be shaped regarding the effects of drug use in high-risk situation; thus, this situation leads to slip and lapses and, then, drug relapse (Miller et al., 2006). Here, drug craving and uncontrollable desires during and after treatment are an important factor in the failure of treatment and the incidence of relapse (Franken, Kroon, Wiers & Jansen, 2000). Non-pharmacological approaches, such as sports exercise, stress management programs, counseling, etc. can prevent mood swings in the addicts under the withdrawal period (Winkelman, 2001). Hence, due to the severity of the anxiety caused by addiction as well as its adverse effects, non-pharmacological approaches can prevent the successful withdrawal or cause relapse into drug use. It is essential that treatment teams use psychological interventions effective in reducing anxiety in the addicts under rehabilitation treatment (Soleimani & Senobar, 2015).

Behavioral Drug and Risk Reduction Counseling (BDRC) is one of the therapeutic techniques based on cognitive-behavioral therapy which has had satisfactory results in the treatment of substance abusers. This intervention makes use of the short-term contracts focused on improving adherence to treatment and leads patients to make early changes in their lifestyle, including stopping or reducing drug use, stopping or reducing high-risk behaviors associated with drug use (Chawarski, Mazlan & Schottenfeld, 2008).

Chawarski, Mazlan & Schottenfeld (2010) conducted a study on heroin abusers and arrived at the conclusion that although both methadone and BDRC have been able to reduce drug use from the base level, this reduction has been significantly higher in the mixed method of methadone treatment with BDRC. Given the paucity of research findings available on the effectiveness of BDRC in the therapeutic components, the current researchers decided to employ this therapeutic method along with methadone as a complementary method to evaluate its effectiveness in drug use craving and lapsing behavior. Undoubtedly, creativity has been on top priority to the researcher in this study in providing more comprehensive treatment programs for the removal of the available barriers and the achievement of satisfactory results. Hence, this study mainly aimed to respond to this question whether the addition of BDRC to the methadone maintenance treatment can reduce the craving and lapsing behavior among crack addicts.

Method

Population, sample, and sampling method

The present research design was a quasi-experimental one with pre-and post-test and control group. The statistical population of this study consisted of the

crack addicts who had presented to the maintenance therapy clinic located in District 8 Tehran from September 22, 2012 to October 22, 2012. For sample selection and research implementation, the researcher prepared a list of the crack addicts who were under maintenance treatment or who had been newly admitted to the center and, then, carried out the semi-structured clinical interview about addiction severity on each of them in order to determine the inclusion criteria. The criteria for inclusion in this study included diagnosis of drug dependence as per the diagnostic criteria of DSM-V, having the middle school education degree and above, aged 20 to 40 years, not suffering any serious physical and mental diseases, the plurality of abortive withdrawal attempt (more than once), the continuous use of crack heroin 6 months before entering the therapy, receiving methadone treatment, being male, and consent to participate in the research. On the other hand, the exclusion criteria included being female, suffering a serious psychiatric problem, continuous crack heroin consumption for less than 6 months, receiving a medical treatment other than methadone, alcohol dependence, and no phone calls for follow-up. In this study, the length of time during which patients were treated with methadone was between 1 and 4 months. After the conduct of the interview, 30 individuals were qualified for participating in the study. They were randomly divided into an experimental group (15 subjects) and a control group (15 subjects). The experimental group underwent twenty-five 90-minute BDRC sessions and received methadone. It is noteworthy that the sample selection took two months and the implementation of the intervention took 6 months. Two testing phases of pre-test and post-test were considered in the study. All the participants completed the Narcotic Drug Abuse and Risky Behaviors Inventory at the beginning of the study and after the completion of the intervention. During this period, the lapsing behaviors of the participants in each group was controlled through the conduct of morphine and stimulant urine test once a week without notice.

Instrument

1- Addiction Severity Index (ASI): To evaluate the patients' clinical status, Addiction Severity Index was used (Fifth Edition, McLellan et al, 1992). The Addiction Severity Index is a semi-structured interview that is conducted by trained researchers in face-to-face contact with patients. This questionnaire collects data on the individuals' problems in the past 30 days, last year, and during lifetime. This scale receives a general score in each section (0-1) and the person's status in that section is rated. Thus, if the mentioned states have taken more than 6 months, the full score will be assigned; otherwise, if they have taken less than 6 months, they will receive a score of zero. This scale consists of 116 questions where 8 items assess the medical status of the respondents (items numbered 1 to 8), 21 question (items numbered 8 to 29) are focused on the employment status, 24 questions (items numbered 29 to 53) extract some

information about the background of drug and alcohol use, 27 questions (items numbered 53 to 80) are focused on the income level, 23 questions (items numbered 80 to 103) are to extract some information about the family status, and 11 questions (items numbered 105 to 116) are targeted at the patients' mental state. The final construction stages of the Persian version of ASI are being passed by Atef Vahid at the Institute of Psychiatry and Psychology and with the cooperation of the Center for Addiction Studies (Mokri, Ekhtiari & Edalati, 2008).

2. Narcotic Drug Abuse and Risky Behaviors Inventory: This questionnaire has been prepared by Bruce Hackman (cited in Karimi et al., 2008). It assesses the state of drug use and risky behavior and includes 36 questions. The items are in yes/no format and are responded to via two alternatives, i.e. yes and no. the assessment of patient's craving in this questionnaire is calculated based on the total score. The total score is interpreted between the highest rate of craving (score 72) and the lowest rate (score 10). This questionnaire has not been evaluated on Iranian populations; therefore, the researcher decided to validate this tool before putting it into practice. The Cronbach's alpha of the instrument on 300 patients taking morphine was obtained equal to 0.88 in the present study.

Procedure

Following the selection of the sample, the researcher informed their families and the objectives of the program and the research procedure were explained to them. In this study, the methadone taken by patients was considered to the extent that there would be no deprivation symptoms or willingness to use narcotics among the participants. In addition, for the encouragement of patients to participate in the sessions of the treatment interventions, it was announced that some part of the patients' monthly fee will be paid to the clinic by the researcher. This was one-fifth of their monthly fees and no other fees were received for service delivery. In this study, the methadone dose administered to patients was decided upon according to the agonists' protocol available in addiction treatment centers. In fact, this dose was to the point that the patient's condition would remain stable. In the present study, two individuals did not stay in the program due to the coincidence of the sessions with official hours of work time and two respondents were left out due to their reluctance. In this way, the research continued with 13 patients in each group.

Behavioral Drug and Risk Reduction Counseling (BDRC) is a very structured individual treatment whose main focus is on the patient's current problem areas that hold an immediate association with drug use abstinence. In general, the objectives of this intervention are to identify the patients' current problems in other areas, to provide a summary of these areas along with recommendations on how to tackle them, or train patients to identify their physiological and emotional states, social and environmental factors, and various lifestyle

problems associated with craving, to help patients develop effective problem-solving strategies and learn effective coping skills to achieve and maintain abstinence from drugs and risky behaviors, and to increase patients' engagement in social interactions and appealing activities unrelated to drug use. This intervention makes use of the short-term contracts focused on improving adherence to treatment and encouraged patients to achieve the mentioned goals. The consultants benefiting from this method also utilize the positive communication style for the success of patients in addition to making use of feedback and positive reinforcement for the improvement and promotion of the patients' status. Early stages of this treatment program are focused on behavioral changes necessary to achieve and maintain abstinence from drug use, whereas the subsequent parts of the treatment aim to link the patients' progress in the treatment with the purpose of long-term improvement (Chawarski et al., 2008).

Results

The descriptive statistics pertaining to the demographic variables of the sample group and the information related to substance abuse are presented in the table below.

Table 1. Descriptive statistics pertaining to the demographic variables and substance abuse for each group

<i>Variable</i>	<i>Criterion</i>	<i>Control group</i>	<i>Experimental group</i>
Age	Year	26.11 ± 4.96	24.11 ± 3.24
Education	Year	9.11 ± 2.15	8.20 ± 3.51
Employment status	Employed	6 (40 %)	3 (20 %)
	Unemployed	9 (60 %)	12 (80%)
Marital status	Married	7 (46.6%)	5 (33.30%)
	Single	8 (53.30%)	10 (66.70%)
Amount of daily consumption	Lower than a gram	1 (6.60%)	2 (13.30%)
	Between one and two grams	4 (26.70%)	1 (6.71%)
	Above two grams	10 (66.70%)	12 (80%)
Duration of addiction	Year	3.11 ± 4.25	2.89 ± 6.13
Duration of methadone treatment	Month	1.11 ± 2.04	2.56 ± 1.11

The descriptive statistics of drug craving and laps rates are presented in the table below for each group and test stage.

Table 2. Descriptive statistics of drug craving and laps rates for each group and test stage

<i>Group</i>	<i>Variable</i>	<i>Pre-test</i>		<i>Post-test</i>	
		<i>Mean</i>	<i>SD</i>	<i>Mean</i>	<i>SD</i>
Control	Craving	62.40	3.291	43.73	3.06
	Lapse	2.07	0.258	0.47	0.52
Experimental	Craving	63.13	2.850	37.20	2.21
	Lapse	1.80	0.561	0.20	0.41

Multivariate analysis of covariance should be used to investigate the effectiveness of Behavioral Drug and Risk Reduction Counseling (BDRC) in the improvement of craving and lapsing among the heroin crack addicts under methadone maintenance treatment. One of the assumptions of using this analysis is the equality of covariance matrices. The results of Box's test indicated that this assumption has been met ($P > 0.05$; $F = 0.658$; $M \text{ Box} = 2.141$). Another assumption for using this test is the equality of error variances. The results of Levene's test indicated that this assumption has been met in craving scores ($F = 0.850$; $P > 0.05$) and lapse scores ($F = 2.350$; $P > 0.05$). Similarly, the assumption of regression slopes homogeneity has been met in drug use craving ($F = 1.168$; $P > 0.05$) and lapse ($F = 1.625$; $P > 0.05$). Considering the fulfillment of these assumptions, multivariate analysis of covariance was performed and the results indicated the existence of a significant difference between the two groups ($\text{Eta-squared} = 0.59$; $P < 0.001$; $F = 18.033$; $\text{Wilks's Lambda} = 0.591$). Univariate analysis of covariance was used to examine the patterns of difference as follows.

Table 3: Results of ANCOVA for examining the patterns of difference

<i>Variable</i>	<i>Mean Square</i>	<i>F</i>	<i>Sig.</i>	<i>Effect size</i>
Craving	272.98	35.898	0.0005	0.58
Lapse	0.23	1.168	0.29	-

As it is observed in the above table, the effectiveness of the counseling in the variable of lapse was not significant, but it was significant in drug use craving ($P < 0.001$). The adjusted descriptive statistics of the variables are presented in the following table for each group and the post-test.

Table 4. Adjusted descriptive statistics of the variables for each group and the post-test

<i>Variable</i>	<i>Group</i>	<i>Adjusted mean</i>	<i>SD</i>
Craving	Control	43.67	0.73
	Experimental	37.26	0.73
Lapse	Control	0.43	0.12
	Experimental	0.24	0.12

Discussion and Conclusion

The present study aimed at investigating the effectiveness of Behavioral Drug and Risk Reduction Counseling (BDRC) in the improvement of drug use craving and lapsing behavior among the heroin crack addicts under methadone maintenance treatment. The results of this study show that the said intervention in combination with methadone maintenance treatment has been more effective in reducing the level of drug use craving and in improving the lapsing behaviors of addicts. This finding is consistent with research finding reported by Chawarski et al. (2010). The current research can be regarded to be innovative in that it has benefited from the integration of BDRC and methadone maintenance treatment for the improvement of drug use craving and lapsing behavior. In consequence, the researchers have encountered limitations in comparing the current findings with those of the similar studies. The majority of the studies in the world have focused on the technique of cognitive-behavioral therapy discretely or in combination with drugs. On the other hand, this research was conducted during a long time and could resolve the shortcomings of the previous studies that had examined interventions only in a short period of time. The explanation of the effectiveness of BDRC in reducing the rate of craving and lapse in crack addicts is indicative of its multiple clinical application.

Counseling and guidance of addicts whet such capabilities as functional analysis, skills learning, coping with the consumption desire, a sense of mastery and ability in individuals that are effective in the increase of treatment motivation or at least in the individuals' stay in the treatment and prevention of risky behaviors. Several factors are effective in the etiology of substance abuse that result in the initiation of drug use and addiction in interaction with each other; in the meantime, some personality traits increase the risk of abuse and relapse. Low self-esteem, lack of social and adaptive skills, employment of immature methods to deal with the stresses of life, and lack of awareness of drug risks and its damage to the body, soul, mind, etc. are among these of these hazardous features (Brooki Milan, Kamarzarin & Zare, 2014). The results of this study and previous ones highlight the position and importance of non-pharmacological interventions in addiction treatment more than anything. Such interventions attempt to rebuild and restore patients' individual, familial, social, and occupational life via concentration on changing the patients' morbid lifestyle into a healthy life, challenging of inefficient cognitive beliefs, the replacement of appropriate behaviors, activation of patients, direction of the daily activities, goal setting, and inattention to the trivial environmental issues.

It is noteworthy that although non-pharmacological interventions can control individual fields to some extent and provide patients with a healthy life, they will not be a complete therapeutic approach in the following. A perfect therapeutic approach must take into consideration the environmental, social, and familial factors, if inappropriate, since these factors can threaten again the already-

created healthy life. Thus, the addicts' social environment should be controlled and monitored so that the potential unrests and turmoil followed by the drug use abstinence can be harnessed. In this way, the possible re-exposure of the individual to addiction will be prevented. Another explanation for the effectiveness of this method can be the fact that the implementation of long-term non-pharmacological interventions and the patients' constant connection with treatment centers and therapists are effective factors in the mitigation of individual, family, social, and occupational problems that are disclosed gradually with the passage of time and can provide the grounds for relapse into drug use. On the other hand, the effectiveness of the above intervention in reducing craving and lapse in drug abusers can be attributed to the principles on which this treatment method is dependent. The guidelines of this treatment method contain recommendations on the implementation of Behavioral Drug and Risk Reduction Counseling (BDRC). The emphasis of this approach on short-term behavioral interventions in addiction treatment seems to be the turning point and effectiveness of this method of treatment, which can explain the improvement in drug use craving and lapsing behavior. Success in implementing simple contracts with short-term behavioral objectives in the early stage of treatment will promote the patient's experience from the treatment success and increase the likelihood of continued adherence to treatment. In this study, the low number of participants and lengthiness of the research duration increased the probability of participant loss. According to the current research findings, it is recommended that non-pharmacologic interventions be simultaneously run on other variables and even consumers of a variety of narcotic drugs.

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